

**IN-MOL-CELL**  
Core Technologies at IIMCB



# **IN-MOL-CELL:** INfrastructure for MOlecules and CELls



IN-MOL-CELL is the place where world-class expertise and cutting-edge technologies converge in one integrated infrastructure.

Our mission is to enable breakthrough research and discovery for academia and industry by providing end-to-end solutions – from experimental design to data acquisition and analysis. For certain equipment, walk-in access is possible after training.

- 1 Infrastructure
- 10 Core Facilities
- 30+ Experts

**Partners:**



**Explore our Core Facilities:**

- Bioinformatics Facility
- Biophysics and Bioanalytics Facility
- Cell Models and Organoids (early stage of development)
- Genome Engineering Facility
- Genomics Facility
- Mass Spectrometry Facility
- Microscopy Facility
- Preclinical Drug Development Facility
- Rodent Facility
- Zebrafish Core Facility

**IN-MOL-CELL – KEY FACTS**



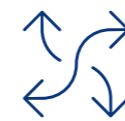
**Expertise**

We are a team of more than 30 scientists. Deep expertise, real passion for science and one clear commitment – to make your research succeed.



**Technologies**

We offer a comprehensive portfolio of cutting-edge technologies delivering a broad range of research solutions – all under one roof.



**Synergy**

Our integrated infrastructure enables us to deliver multi-platform research projects, tackling the most complex scientific questions.



**Impact**

For 15+ years, we have partnered with 100+ clients – from academia to Poland’s top R&D companies – delivering critical research solutions across preclinical modeling, biosimilarity studies, structural screening and beyond.



**Service philosophy**

Your research is our research. We take the time to understand your needs, consult to propose the most effective solutions and bring the same passion and care to your project as we do to our own.



*Behind every scientific breakthrough stands the right technology and the right people. At IN-MOL-CELL, we are committed to building core facilities where both can thrive. Through continuous investment, we identify and integrate the most advanced technologies to support pioneering research. We firmly believe that science belongs to everyone, which is why IN-MOL-CELL is open and accessible to all researchers, welcoming users from universities, research institutes, and industry alike.*

Olga Gewartowska, PhD  
Head of Core Facilities Programme



**Contact Us**

[inmolcell@iimcb.gov.pl](mailto:inmolcell@iimcb.gov.pl)  
[inmolcell.iimcb.gov.pl](http://inmolcell.iimcb.gov.pl)

Scan to learn more



# Bioinformatics

*Accelerating Discovery  
Through Computational  
Biology.*

By working hand in hand with the Genomics and Mass Spectrometry Facilities, we offer a fully integrated data-to-insight service. This unique collaboration ensures exceptional data quality and cutting-edge bioinformatic interpretations.



## Key Outcomes

- We support researchers by transforming complex biological data into clear, actionable insights.
- We provide comprehensive bioinformatic expertise for omics-based projects, delivering high-quality analyses for RNA-seq, single-cell RNA-seq, and proteomics datasets.
- In collaboration with the Genome Engineering and Genomics Facilities, we delivered routine plasmid sequencing and genotyping services for approximately 700 samples.
- We performed Oxford Nanopore-based whole-genome assembly for bacterial and *C. elegans* samples, offering high-resolution data for advanced research applications.

## Services

### Next-Generation Sequencing:

- Transcriptomics: Bulk and single-cell RNA-seq analysis, differential expression, pathway enrichment
- Genomics: Whole-genome sequencing, variant calling, annotation

### Proteomics:

- Differential abundance analysis from labeled (TMT, SILAC) and label-free MS data

### Custom Solutions:

- Tailored pipelines for publication-quality statistical analysis, data visualization, and reproducible reporting

## Capabilities

High-Performance Computing Infrastructure:

- Compute Nodes: 10 servers
- Processing Power: 4000 threads
- GPU Accelerators: 8x NVIDIA RTX 5000 PRO BLACKWELL SE
- Memory: 2TB RAM
- Storage Capacity: 2.3 PB HDD + 280 TB SSD

## Client Feedback

“The Bioinformatics Facility provided solid expertise and high-quality scRNA-seq analysis that offered valuable new insights into our zebrafish neurodegenerative disease model. The data were presented in a well-organized and self-explanatory way, which allowed us to interpret them quickly and effectively. Our collaboration throughout the project was clear, efficient, and supportive.”

**Prof. Jacek Kuźnicki,**  
Head of Laboratory of Neurodegeneration at IIMCB

## Contact Us

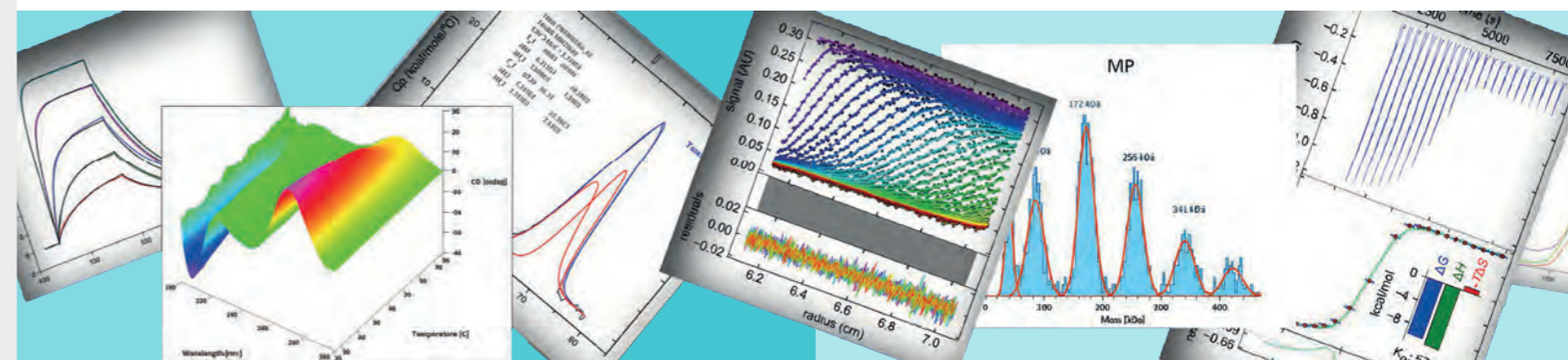
[bf-team@iimcb.gov.pl](mailto:bf-team@iimcb.gov.pl)  
[jszymanski@iimcb.gov.pl](mailto:jszymanski@iimcb.gov.pl)  
[bf.iimcb.gov.pl](http://bf.iimcb.gov.pl)

Scan to  
learn more

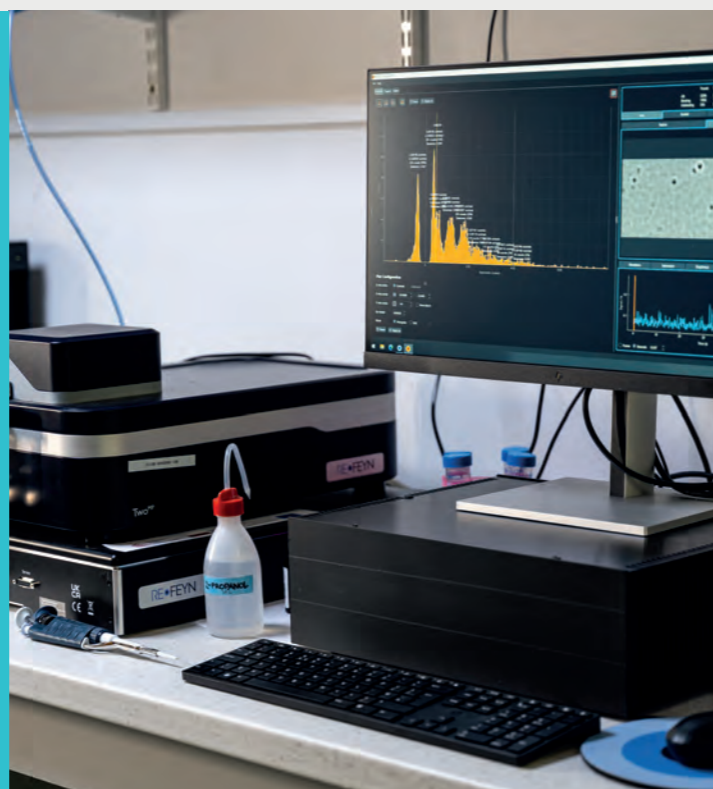


# Biophysics

*Whatever you want  
to know about your favorite  
macromolecule.*



Using an extensive portfolio of molecular biophysics methods, we establish the key features of macromolecules and macromolecular complexes, including secondary and quaternary structure, thermal and chemical stability, and intermolecular interactions.



## Key Outcomes

- 29 publications, including 15 with external clients.
- Services for many scientific institutions in Poland (e.g. Institute of Biochemistry and Biophysics PAS, Institute of Bioorganic Chemistry PAS, Mossakowski Medical Research Institute PAS, Małopolska Centre of Biotechnology at the Jagiellonian University, University of Łódź, Centre of New Technologies of the University of Warsaw, University of Gdańsk, Wrocław University of Science and Technology, Hirszfeld Institute of Immunology and Experimental Therapy PAS, Warsaw University of Technology, Nencki Institute of Experimental Biology PAS).
- Participation in R&D projects of several partners (e.g. Selvita Services, Adamed, OncoArendi/Molecure, Captor Therapeutics).
- Biosimilarity studies in several projects of Polpharma on biological drugs.

## Services

- Size distribution (quaternary structure)
- Secondary structure and macromolecular stability
- Intermolecular interactions

We have broad experience in combining these methods in research and development projects, including biosimilarity studies for academic and commercial clients.

## Capabilities

- Analytical Ultracentrifugation
- Dynamic Light Scattering with zeta potential
- Circular Dichroism and Fourier-Transform Infrared Spectroscopy
- Differential Scanning Calorimetry
- Isothermal Titration Calorimetry
- Surface Plasmon Resonance
- Microscale Thermophoresis with spectral shift
- Ultra-Performance Liquid Chromatography
- Bio-inert High-Performance Liquid Chromatography
- Mass Photometry

## Client Feedback

„Access to this specialized infrastructure, together with the expertise of the IIMCB team, significantly supported the execution of Adamed’s Discovery research activities. Based on our experience, I can recommend Biophysics and Bioanalytics Facility team as a reliable and valuable partner for scientific collaboration.”

**Sebastian Pawlak, PhD**  
Head of Biotechnology and Recombinant Proteins Group, Research Department at Adamed Discovery

## Contact Us

[kskowronek@iimcb.gov.pl](mailto:kskowronek@iimcb.gov.pl)  
[core-facility.iimcb.gov.pl/bbf/](https://core-facility.iimcb.gov.pl/bbf/)

Scan to  
learn more



# Genome Engineering

*Transgenic mouse models for academic research and rare disease studies.*

Combining our molecular biology and embryology expertise, we utilize CRISPR/Cas9 technology to offer genetically modified and transgenic mouse models suitable for a range of applications, from basic research to rare disease studies. Our portfolio, available to both research groups at the IIMCB and external clients, including for-profit and non-profit organizations, also includes a range of other services such as cloning, genotyping, mouse line cryopreservation and rederivation.

## Services

- Generation of genetically modified mouse and *C. elegans* models using CRISPR/Cas9 methodology
- Embryological services: *in vitro* fertilization (classical and IntraCytoplasmic Sperm Injection – ICSI), sperm and embryo cryopreservation, mouse line rederivation
- Preparation of plasmids
- Genotyping, including establishing new genotyping protocols
- Mouse breeding and initial phenotyping
- Microinjections into oocytes and zygotes
- Consulting on custom projects

## Capabilities

- State-of-the-art setup for microinjections and ICSI
- IVF-grade laminar for sterile embryo and animal handling
- Combined expertise in genetic engineering, molecular biology, and embryo manipulation
- Modern IVC breeding infrastructure
- Modern automated platforms for molecular biology applications

## Key Outcomes

The Genome Engineering Facility has a strong track record of collaborations, providing mouse models and other services to the IIMCB research community and external collaborators, both business partners and non-profit patient foundations. These projects range from studying basic gene function, through the generation of constructs utilized for protein expression, to creating rare disease models utilized for deciphering the molecular basis and searching for potential therapies.

### Selected collaborations:

- Knock-out mutation of the *Cdad1* gene enabled the group of Prof. Matthias Bochtler (IIMCB) to determine the enzyme's role in mammals (Slyvka et al., Proc. Natl. Acad. Sci. U.S.A., 2025).
- Several mouse models were used by the group of Prof. Andrzej Dziembowski (IIMCB) and collaborators to reveal the previously unknown impact of *TENT5* enzymes on mRNA vaccine metabolism (Krawczyk et al., Nature, 2025).
- Recreation of a patient-derived *Trap1* mutation in a mouse model allowed teams from the University of Warsaw and the Medical University of Warsaw to demonstrate a link between mitochondrial dysfunction and autism spectrum disorder (Rydzanicz et al., EMBO Mol Med., 2024).

## Client Feedback

„We are a patient-driven charitable project and our mission is to improve the lives of all people affected by Myofibrillar Myopathy Type 13 (MFM13) with rimmed vacuoles. Our collaboration with the International Institute of Molecular and Cell Biology has been essential for advancing MFM13 research. The development of the MFM13 mouse model will help us gain a better understanding of the molecular mechanisms of the disease and explore potential treatment options.”

**Sylwia Szewc**

Research Program Manager, Cure MFM13 ([curemfm13.org](http://curemfm13.org))

## Contact Us

[geu-manager@iimcb.gov.pl](mailto:geu-manager@iimcb.gov.pl)  
[mbrouze@iimcb.gov.pl](mailto:mbrouze@iimcb.gov.pl)

[geu.iimcb.gov.pl](http://geu.iimcb.gov.pl)

+48 668 587 983

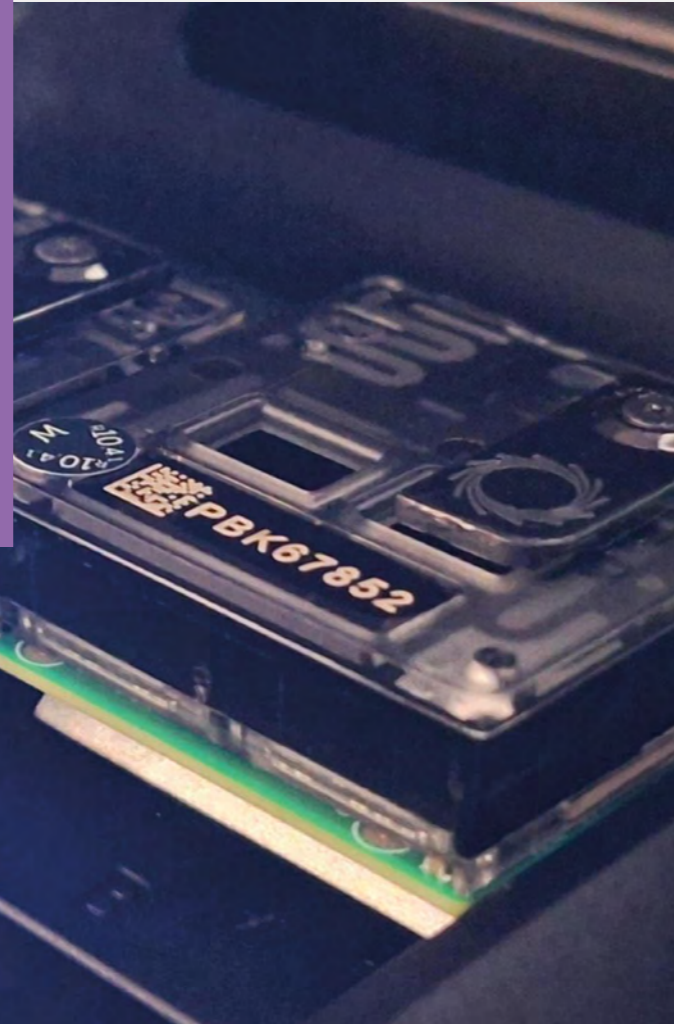
Scan to  
learn more



# Genomics

*Decoding genomes,  
one nanopore at a time.*

We provide sequencing services using nanopore-based technologies. We handle all steps of the project: from consultation, through RNA isolation and purification, library preparation and sequencing, to basic bioinformatic analysis.



## Services

- Whole-transcriptome sequencing (Direct RNA or cDNA protocol)
- Whole-genome sequencing
- DNA fragments sequencing
- Plasmid sequencing
- DNA/RNA isolation and quality control

## Capabilities

- **Nanopore sequencing platforms:** MinION Mk1D and PromethION 2 Solo
- **Sample quality control:** Agilent 4150 TapeStation system

## Key Outcomes

- Successful generation of high-quality, long-read sequencing data enabling comprehensive transcriptome profiling, isoform discovery, and poly(A) tail characterization.
- End-to-end support that delivers actionable results, from RNA isolation and library preparation to data analysis and interpretation, tailored to the customer's research questions.
- Flexible customization and consultation that optimize experimental design and improve reproducibility, ensuring you get data aligned with your objectives and timelines.
- Remarkable experience in nanopore-based sequencing, resulting in several high-impact publications (e.g.: Krawczyk et al. 2025, Nature; Brouze et al. 2024; Nature Communications).



## Client Feedback

"The Genomics Facility of IIMCB has been an invaluable partner in my research, providing high-quality sequencing support and expert guidance at every stage of analysis. Their efficiency and technical excellence have significantly accelerated my projects and expanded the scope of questions I am able to address."

**Mohammed Al-Sarraf, PhD**  
Department of Eco-Epidemiology of Parasitic Diseases, Faculty of Biology,  
University of Warsaw

## Contact Us

[geu-seq@iimcb.gov.pl](mailto:geu-seq@iimcb.gov.pl)  
[inmolcell.iimcb.gov.pl](mailto:inmolcell.iimcb.gov.pl)

Scan to  
learn more



# Mass Spectrometry

*From concept to data – mass spectrometry that empowers discovery.*

We use cutting-edge instrumentation and a holistic approach to provide high-quality multi-omics data to our clients that advances their research. Our experts are there every step of the way, from conception of the idea to final data interpretation.



## Services

- Bottom-up proteomics
- Interactomics
- Consultations and data analysis
- Custom method development

## Capabilities

- Bruker timsUltra AIP mass spectrometer coupled to an UltiMate 3000RS nano-LC
- Thermo Excedion Pro BioPharma mass spectrometer with ETD and FAIMS coupled to a Vanquish Neo nano-LC
- Vanquish Horizon UHPLC

## Key Outcomes

Our Mass Spectrometry Facility enables researchers to explore biology in unprecedented detail. Leveraging versatile and advanced technologies such as ion mobility separation and alternative fragmentation, we help you:

- **Resolve complex molecular landscapes:** High-resolution instrumentation enables precise analysis of proteins, metabolites, and lipids across diverse biological systems.
- **Detect subtle molecular changes:** Sensitive instrumentation allows high-throughput studies from limited sample material that inform functional understanding.
- **Expand research horizons:** Flexible workflows support multi-omic studies and structural biology approaches, empowering innovative experiments beyond standard proteomics.
- **Accelerate discovery:** Generate actionable insights that drive biomedical research forward, supported by expert guidance from experimental design to data interpretation.

We translate complex samples into meaningful data, providing researchers with the clarity and confidence to pursue breakthrough science.



## Client Feedback

"Having had the opportunity to see this facility develop from an initial concept to where it is today, I'm truly impressed by the cutting-edge setup the Mass Spectrometry Facility at IIMCB has achieved, which reflects best practices in modern proteomics. The team is exceptionally well equipped to deliver high-quality, impactful research from the outset. I look forward to seeing what they accomplish next and the value they will bring as a trusted partner to their clients."

**Simon Devos, PhD**  
Head of the Proteomics Core, VIB, Belgium

## Contact Us

[msf@iimcb.gov.pl](mailto:msf@iimcb.gov.pl)  
[msf.iimcb.gov.pl](http://msf.iimcb.gov.pl)

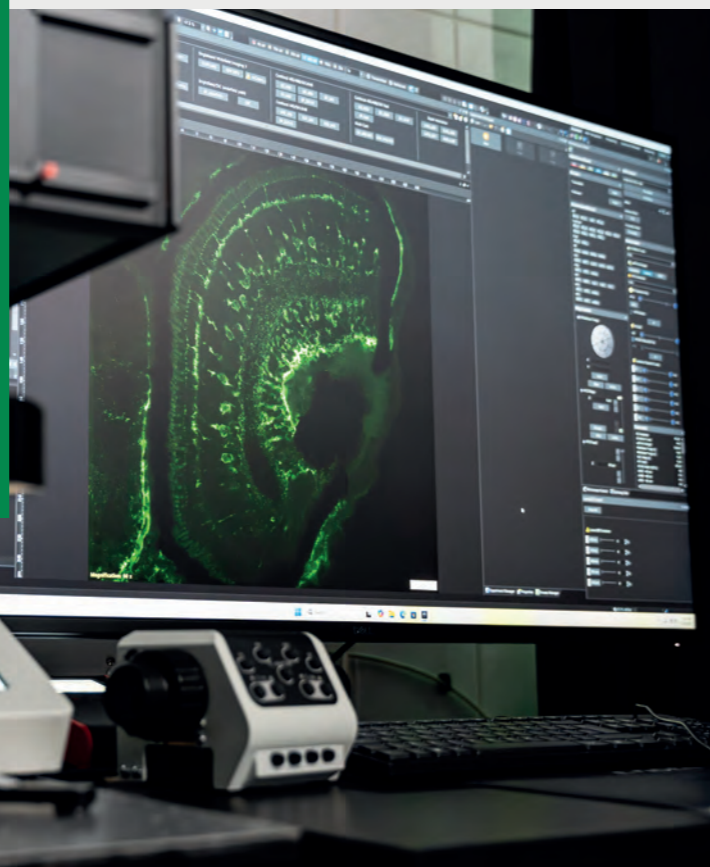
Scan to  
learn more



# Microscopy & Cytometry

*From organisms to cellular ultrastructure. Accelerate your discoveries with our cytometry and imaging solutions.*

Our facility combines light microscopy, electron microscopy, and flow cytometry to support advanced biological research. We offer both walk-in and full-service options, depending on the experiment type, instrumentation, and customer needs.



## Services

- Access to advanced fluorescence microscopes
- Cell sorting by flow cytometry
- Cellular ultrastructure analysis using transmission and scanning electron microscopy

## Capabilities

- Confocal (LSM990), spinning-disk (spinSR10), super-resolution (Elyra 7), and lightsheet (Lightsheet Z.1 and Blaze) microscopes
- Fluorescence-activated cell sorter with spectral and imaging capabilities (FACSDiscover S8)
- Hydra Bio plasma focused ion beam scanning electron microscope

## Key Outcomes

### Long-standing expertise:

- Consultation on experimental design and hands-on training for multiple facility users
- Advanced experimental pipelines
- Data analysis and interpretation

### Collaborative research with scientists from renowned institutions, including:

- University of Warsaw
- Mossakowski Medical Research Institute PAS
- Institute of Biochemistry and Biophysics PAS

### Contribution to peer-reviewed publications:

- Wasilewska et al., Commun Biol, 2026
- Domagala et al., Cancer Res, 2025
- Tempes et al., Cell Mol Life Sci, 2024
- Baranykova et al., Sci Rep, 2024
- Fedorowicz et al., BBA Mol Cell Res, 2024

## Client Feedback

*"We thank the Microscopy Facility members for helpful discussions and support in planning the experiments for the study *E3 ubiquitin ligase RNF2 protects polymerase iota from destabilization*".*

**Justyna McIntyre, PhD**  
Institute of Biochemistry and Biophysics  
of the Polish Academy of Sciences

## Contact Us

[twegierski@iimcb.gov.pl](mailto:twegierski@iimcb.gov.pl)  
[mcf.iimcb.gov.pl](http://mcf.iimcb.gov.pl)

Scan to  
learn more



# Protein & Macromolecular Structure

*Revealing molecular  
beauty with cutting-edge  
cryo-EM.*



**We provide a comprehensive and integrated suite of services, spanning every stage from gene cloning to high-resolution protein structure determination, complemented by expert consultations and data analysis support. This unique combination ensures seamless project execution, from concept to structural insight, and maximizes the scientific and practical value of every collaboration.**

## Key Outcomes

Our facility supports researchers across the life sciences, with a particular focus on structural biology.

- Supporting research in drug discovery
- Engaging in collaborative molecular and biomedical projects with IIMCB teams and partners both nationally and internationally
- Providing purified recombinant proteins to our internal and external clients
- Screening cryo-EM grids, collecting data sets, solving structures
- Consulting results and helping to navigate project in the right direction

### Publications:

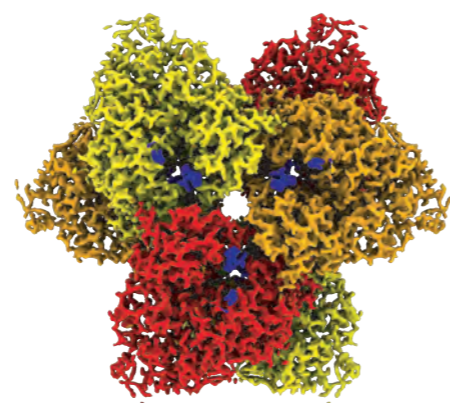
Yu He et. al Cell (2026)  
Neary et al. Eur J Pharm Sci. (2026)  
Kaus-Drobek et al. Sci Rep. (2025)  
López Espinar et al. ACS Appl Bio Mater (2025)  
Czestkowski et al. J. Med. Chem. (2024)  
Borek et al. Mol. Cancer Ther. (2023)

## Services

- Protein production in three different expression systems
- High-quality recombinant protein purification
- Crystallization of proteins and their complexes with ligands
- X-ray data analysis from data collection to structure analysis
- Cryo-electron microscopy from sample preparation to 3D structure
- Collaboration with scientific teams to advance discovery

## Capabilities

- Glacios 2 cryo-TEM for visualization and high-resolution data collection
- Incubators enabling protein expression in *E. coli*, mammalian, and insect cells
- Advanced chromatographic systems for automated protein purification
- Crystallization robots dispensing solutions in nanoliter volumes



*Structure captured on our Glacios 2 Cryo-TEM*

## Client Feedback

"We have already benefited from the services offered by the Preclinical Drug Development Facility (PDU), particularly in the area of protein purification and crystallization. The professional support and technical capabilities of the facility have contributed meaningfully to our research"

**Izabela Sabała, PhD, DSc Habil**  
Head of the Laboratory of Protein Engineering at Mossakowski Medical Research Institute PAS

## Contact Us

[PDU@iimcb.gov.pl](mailto:PDU@iimcb.gov.pl)  
[pdu.iimcb.gov.pl](http://pdu.iimcb.gov.pl)

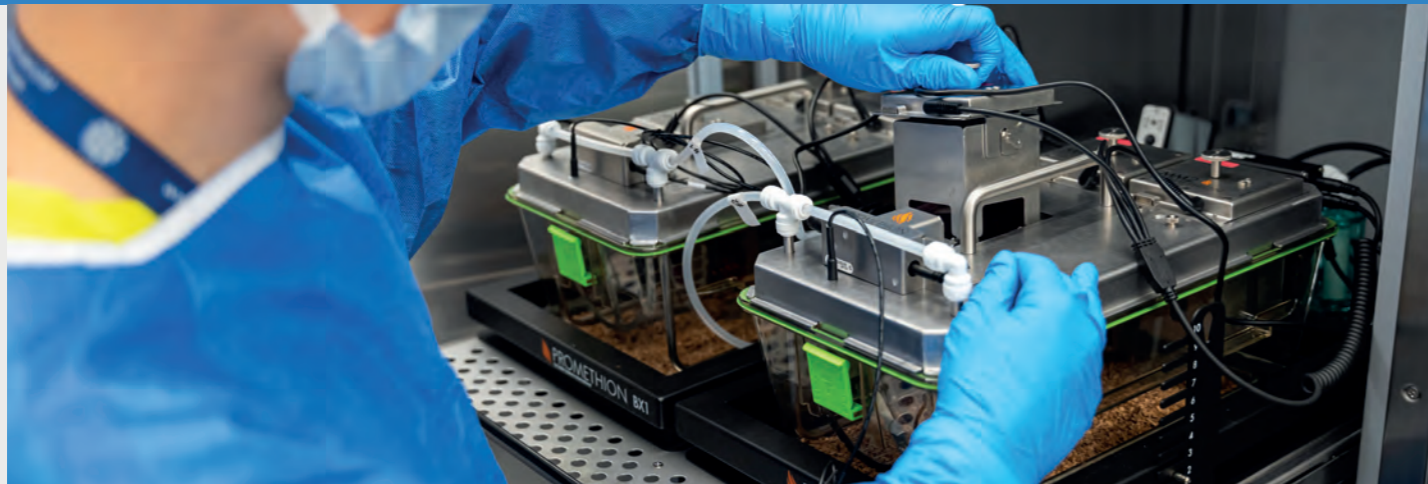
Scan to  
learn more



# Rodent Models

*From breeding to phenotyping: comprehensive support for your research excellence.*

We are committed to ensuring the highest standards of humane care for the welfare of animals that are used in research, with the understanding that this commitment is critical to the success of our scientific projects.



## Services

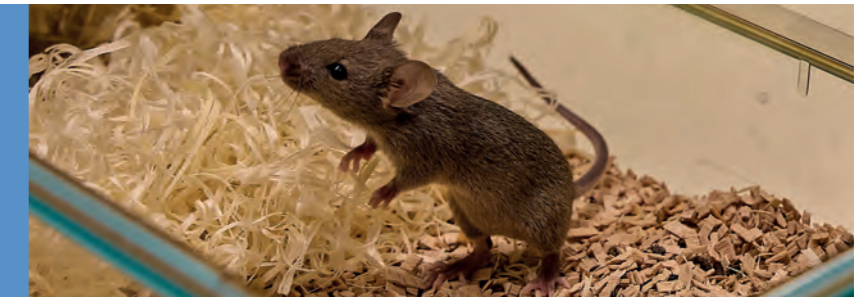
- Husbandry & breeding
- Comprehensive metabolic and behavioral analysis using a specialized research platform
- Advanced DVC® systems enable continuous, non-invasive animal monitoring insights
- Biochemical and electrolyte analysis in body fluids
- Consulting on scientific projects involving mouse models

## Capabilities

- Promethion Core Metabolic and Behavioral Cages from Sable Systems enable efficient line phenotyping and treatment impact analysis
- Digital Ventilated Cage (DVC®) systems – 24/7 tracking technologies enable continuous monitoring and analysis of rodent activity
- ISOcage P – Bioexclusion System enables research with germ-free animals

## Key Outcomes

- **SPF Breeding & Animal Husbandry:** The Facility maintains mice under specific-pathogen-free conditions, with full husbandry support and protocol development, providing a clean and controlled baseline for reproducible *in vivo* research.
- **Surgical & In Vivo Experimental Support:** The Facility delivers precise anaesthesia and maintains stable physiological conditions during surgery, enabling delicate long-duration procedures and multi-modal imaging studies critical to mechanistic discoveries.
- **Metabolic & Biochemical Phenotyping:** The Facility's integrated suite of metabolic, behavioural, and biochemical phenotyping platforms — including the Promethion Core, Cobas c111, and AVL 9180 — allows comprehensive *in vivo* characterisation of disease models, supporting data-rich grant projects and high-impact publications.
- **Precision Dietary Interventions & Cohort Management:** The Facility implements controlled dietary regimens — such as iron-deficient versus iron-balanced diets — and maintains age-matched cohorts, supporting discoveries advancing the understanding of iron metabolism disorders, mRNA biology & stability, and gut-liver axis biology.



## Client Feedback

„Working with the Rodent Facility at IIMCB has been instrumental in supporting our research. The facility provides excellent conditions for breeding and maintaining genetically modified mouse models, ensuring high standards of animal welfare and experimental reliability. We particularly value the professional support and expert advice offered by the staff, as well as the regular updates on colony status, which greatly facilitate planning and execution of experiments. It is also impressive to see the facility continuously developing and expanding its equipment and capabilities.”

**Patrycja Daszczuk, PhD**  
Laboratory of Cell Biology, International Institute of Molecular and Cell Biology in Warsaw

## Contact Us

[rf-team@iimcb.gov.pl](mailto:rf-team@iimcb.gov.pl)  
[rf.iimcb.gov.pl](http://rf.iimcb.gov.pl)

Scan to  
learn more

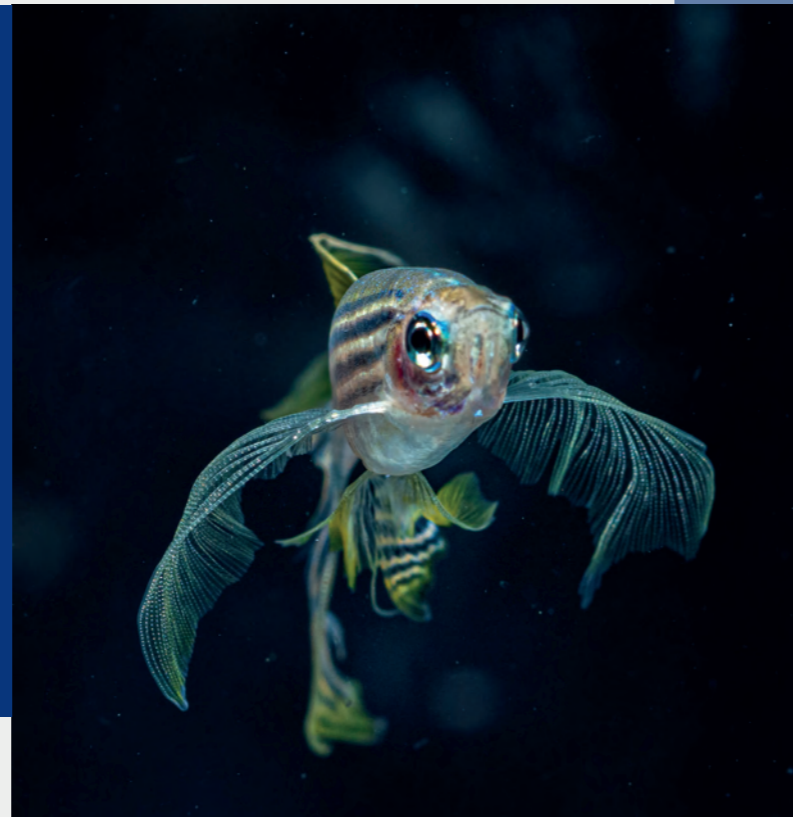


# Zebrafish Models

Where tiny fish help answer big questions in biology.



We offer long-standing expertise in zebrafish breeding and care. With many years of experience, we provide reliable and high-quality zebrafish lines, ensuring optimal health, welfare, and reproducibility for research.



## Key Outcomes

Zebrafish Core Facility (ZCF) plays a key role in supporting a wide range of research in the life sciences, fostering collaboration and sharing expertise within and beyond IIMCB.

- Supporting research in developmental biology, genetics, and neurobiology using *Danio rerio* as a model organism.
- Collaborating with IIMCB research groups and international partners on molecular and biomedical projects.
- Providing zebrafish embryos and established lines to external research institutions, including University of Warmia and Mazury in Olsztyn; University of Warsaw; Warsaw University of Life Sciences – SGGW; Nencki Institute of Experimental Biology, PAS; and The International Institute of Molecular Mechanisms and Machines, PAS.
- Offering consultations and hands-on support for setting up new zebrafish laboratories, sharing our experience in breeding, care, and facility management.
- Exchanging zebrafish lines with other research centers to promote scientific collaboration and diversity of genetic models.

## Services

- Breeding and maintaining healthy *Danio rerio* (zebrafish) for research purposes
- Providing embryos and adult fish for biomedical experiments
- Microinjection of zebrafish embryos
- Screening zebrafish embryos for fluorescence signals to identify transgenic lines
- Cryopreservation of zebrafish sperm to maintain genetic diversity and support long-term line preservation
- Tissue sampling and genotyping
- Fish handling and welfare trainings for new and experienced users

## Capabilities

- Advanced microinjection stations for embryo manipulation and genetic studies
- Fluorescence microscopy for screening zebrafish embryos and larvae for transgene expression
- Controlled aquatic systems ensuring optimal zebrafish health and breeding
- Dedicated behavioral testing room, equipped for studies on zebrafish embryos, larvae, and adult fish
- Expertise in the setup, operation and optimization of aquatic systems

## Client Feedback

„ZCF is truly the backbone of our zebrafish research at IIMCB. Their professionalism, care, and deep understanding of zebrafish biology make it possible for us to pursue our science with confidence and precision.“

**Cecilia Winata PhD, DSc Habil**  
Head of the Laboratory of Zebrafish Developmental Genomics at IIMCB

## Contact Us

[zcf-team@iimcb.gov.pl](mailto:zcf-team@iimcb.gov.pl)  
[zcf.iimcb.gov.pl](http://zcf.iimcb.gov.pl)

Scan to learn more





#### IN-MOL-CELL Infrastructure is funded by:

The European Union – NextGenerationEU under National Recovery and Resilience Plan



RACE project: RNA and Cell Biology – from Fundamental Research to Therapies



Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.

RACE-PRIME project: RNA and Cell Biology Platform for Research and Innovation in Medicine



“Co-financing of the Maintenance of the Molecules and Cells Research Infrastructure (IN-MOL-CELL)”

Grant from the Minister of Science and Higher Education awarded to finance costs related to the maintenance of the research infrastructure/research facility.  
Decision No.: 35/624987/SPUB/SP/2025.

